

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-74. (canceled)

75. (currently amended) A method of delivering a drug to a subject comprising administering to the subject a therapeutically effective amount of a pharmaceutical composition comprising a ~~a~~ therapeutically effective amount of a nucleic acid encoding a chimeric protein comprising (i) a first protein comprising ~~at least~~ 6 contiguous amino acids of ~~the an~~ amino acid sequence ~~selected from the group consisting of~~ SEQ ID NO:51 NOS:1-55, said contiguous amino acids being capable of specifically binding to ~~the a~~ gastro-intestinal receptor ~~selected from the group consisting of~~ HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), said first protein being fused via a covalent bond to a second protein being a drug; and a pharmaceutically acceptable carrier.

76-108. (canceled)

109. (currently amended) A method of delivering an active agent in vivo comprising administering to a subject a composition comprising a purified protein which specifically binds ~~the a~~ gastro-intestinal tract receptor, ~~which receptor is selected from the group consisting of~~ HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), ~~and hSI (SEQ ID NO:181)~~, wherein the purified protein is bound to a material comprising an active agent selected from the group consisting of an imaging agent, a drug, and an antigen, ~~said active agent being of value in the treatment of a mammalian disease or disorder~~, and wherein the purified protein is ~~selected from the group consisting of~~

(a) ~~a protein comprising an~~ comprises the amino acid sequence ~~selected from the group consisting of~~ SEQ ID NO:51 NOS:1-55 or a binding portion thereof of at least 6 contiguous amino acids that mediates binding to HPT1;

(b) ~~a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa1 Thr Xaa2 Xaa3 Ser Xaa4 Xaa5 Xaa6 Asn Xaa7 Arg (SEQ ID NO:253), where Xaa1 is Ser or Thr; Xaa2 is Arg or Lys; Xaa3 is Lys or Arg; Xaa4 is Ser or Leu; Xaa5 is Arg, Ile, Val, or Ser; Xaa6 is Ser, Tyr, Phe, or His; and Xaa7 is Pro, His or Arg;~~

(c) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~Asp Xaa1 Asp Xaa2 Arg Arg Xaa3 Xaa4 (SEQ ID NO:254)~~ where Xaa1 is Ser, Ala, or Gly; Xaa2 is Val or Gln; Xaa3 is Pro, Gly, or Ser; and Xaa4 is Trp or Tyr;

(d) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~Val Arg Ser Gly Cys Gly Xaa1 Xaa2 Ser Ser (SEQ ID NO:255)~~, where Xaa1 is Ala or Phe; and Xaa2 is Arg or His;

(e) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~NTRKSSRSNPR (SEQ ID NO:256)~~;

(f) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~STKRSLIYNHR (SEQ ID NO:257)~~;

(g) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~STGRKVFNRR (SEQ ID NO:258)~~;

(h) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~TNAKHSSHNR (SEQ ID NO:259)~~;

(i) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~DSDVRRPW (SEQ ID NO:260)~~;

(j) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~AADQRRGW (SEQ ID NO:261)~~;

(k) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~DGRGGRSY (SEQ ID NO:262)~~;

(l) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~RVRS (SEQ ID NO:263)~~;

(m) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and

(n) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).

110. (currently amended) The method of claim 109 wherein the purified protein comprises ~~the an~~ amino acid sequence of SEQ ID NO:51 ~~selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.~~

111-116. (canceled)

117. (previously added) The method of claim 109 wherein the material is a particle containing the active agent.

118. (previously added) The method of claim 109 wherein the active agent is a drug.

119. (currently amended) The method as in any one of claims ~~110~~ 109 and 117-118 wherein the purified protein is not more than 40 amino acids in length.

120. (currently amended) The method as in any one of claims ~~110~~ 109 and 117-118 wherein the purified protein is not more than 30 amino acids in length.

121. (currently amended) The method as in any one of claims ~~110~~ 109 and 117-118 wherein the purified protein is not more than 20 amino acids in length.

122. (currently amended) The method as in any one of claims 109, 110 and 117-118 wherein said ~~composition~~ purified protein facilitates the transport of the active agent through human or animal gastro-intestinal tissue.

123. (currently amended) The method as in any one of claims 109, 110 and 117-118, in which the administering is oral.

124. (currently amended) The method as in any one of claims 109, 110 and 117-118, in which the active agent is a drug.

125. (currently amended) The method as in any one of claims 109, 110 and 117-118, in which the subject is human.

126. (previously added) The method of claim 124, in which the subject is human.

127. (currently amended) A method of delivering a drug to a subject comprising administering to the subject a composition comprising a purified protein which specifically binds the a gastro-intestinal tract receptor, ~~which receptor is selected from the group consisting of HPT1 (SEQ ID NO:178), hPEPT1 (SEQ ID NO:176), D2H (SEQ ID NO:179), and hSI (SEQ ID NO:181), wherein the purified protein is covalently bound to a particle containing a drug of value in the treatment of a mammalian disease or disorder, and wherein the purified protein is selected from the group consisting of~~

(a) ~~a protein comprising an~~ comprises the amino acid sequence selected from the group consisting of SEQ ID NO:51 NOS:1-55 or a binding portion thereof of at least 6 contiguous amino acids that mediates binding to HPT1;

(b) ~~a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Xaa1 Thr Xaa2 Xaa3 Ser Xaa4 Xaa5 Xaa6 Asn Xaa7 Arg (SEQ ID NO:253), where Xaa1 is Ser or Thr; Xaa2 is Arg or Lys; Xaa3 is Lys or Arg; Xaa4 is Ser or Leu; Xaa5 is Arg, Ile, Val, or Ser; Xaa6 is Ser, Tyr, Phe, or His; and Xaa7 is Pro, His or Arg;~~

(c) ~~a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Asp Xaa1 Asp Xaa2 Arg Arg Xaa3 Xaa4 (SEQ ID NO:254) where Xaa1 is Ser, Ala, or Gly; Xaa2 is Val or Gln; Xaa3 is Pro, Gly, or Ser; and Xaa4 is Trp or Tyr;~~

(d) ~~a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: Val Arg Ser Gly Cys Gly Xaa1 Xaa2 Ser Ser (SEQ ID NO:255), where Xaa1 is Ala or Phe; and Xaa2 is Arg or His;~~

(e) ~~a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: NTRKSSRSNPR (SEQ ID NO:256);~~

(f) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~STKRSLIYNHR (SEQ ID NO:257);~~

(g) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~STGRKVFNRR (SEQ ID NO:258);~~

(h) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~TNAKHSSHNR (SEQ ID NO:259);~~

(i) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~DSDVRRPW (SEQ ID NO:260);~~

(j) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~AADQRRGW (SEQ ID NO:261);~~

(k) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~DGRGGRSY (SEQ ID NO:262);~~

(l) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~RVRS~~
(SEQ ID NO:263);

(m) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~SVRSGCGFRGSS (SEQ ID NO:264); and~~

(n) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of:

~~SVRGGCGAHSS (SEQ ID NO:265).~~

128. (currently amended) The method of claim 127 wherein the protein comprises ~~the an amino acid sequence of SEQ ID NO:51 selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.~~

129-134. (canceled)

135. (currently amended) The method ~~as in any one of claims~~ of claim 127
~~128-134~~ wherein the purified protein is not more than 40 amino acids in length.

136. (currently amended) The method ~~as in any one of claims~~ of claim 127
~~128-134~~ wherein the purified protein is not more than 30 amino acids in length.

137. (currently amended) The method ~~as in any one of claims~~ of claim 127
~~128-134~~ wherein the purified protein is not more than 20 amino acids in length.

138. (currently amended) The method as in any one of claims ~~127-128-134~~
wherein said ~~composition~~ purified protein facilitates the transport of the drug through human
or animal gastro-intestinal tissue.

139. (currently amended) The method as in any one of claims ~~127-128-134~~ in
which the administering is oral.

140. (currently amended) The method as in any one of claims ~~127-128-134~~ in
which the subject is a human.

141. (currently amended) A method of delivering a drug to a subject comprising
administering to the subject a composition comprising a purified protein which specifically
binds the a gastro-intestinal tract receptor, ~~which receptor is selected from the group~~
~~consisting of~~ HPT1 (SEQ ID NO:178), ~~hPEPT1~~ (SEQ ID NO:176), D2H (SEQ ID NO:179),
and ~~hSI~~ (SEQ ID NO:181), wherein the purified protein is covalently bound to a drug of
value in the treatment of a mammalian disease or disorder, and wherein the purified protein is
~~selected from the group consisting of~~

(a) ~~a protein comprising an~~ comprises the amino acid sequence selected
from the ~~group consisting of~~ SEQ ID NO:51 NOS:1-55 or a binding portion thereof of at least
6 contiguous amino acids that mediates binding to HPT1;

(b) ~~a protein which is not more than 50 amino acids in length and includes,~~
~~positioned anywhere along its sequence, the contiguous amino acid sequence of:~~ Xaa1-Thr
Xaa2-Xaa3-Ser-Xaa4-Xaa5-Xaa6-Asn-Xaa7-Arg (SEQ ID NO:253), where Xaa1 is Ser or Thr;
Xaa2 is Arg or Lys; Xaa3 is Lys or Arg; Xaa4 is Ser or Leu; Xaa5 is Arg, Ile, Val, or Ser;
Xaa6 is Ser, Tyr, Phe, or His; and Xaa7 is Pro, His or Arg;

(c) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~Asp Xaa1 Asp Xaa2 Arg Arg Xaa3 Xaa4 (SEQ ID NO:254) where Xaa1 is Ser, Ala, or Gly; Xaa2 is Val or Gln; Xaa3 is Pro, Gly, or Ser; and Xaa4 is Trp or Tyr;~~

(d) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~Val Arg Ser Gly Cys Gly Xaa1 Xaa2 Ser Ser (SEQ ID NO:255), where Xaa1 is Ala or Phe; and Xaa2 is Arg or His;~~

(e) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~NTRKSSRSNPR (SEQ ID NO:256);~~

(f) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~STKRSLIYNHR (SEQ ID NO:257);~~

(g) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~STGRKVFNRR (SEQ ID NO:258);~~

(h) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~TNAKHSSHNR (SEQ ID NO:259);~~

(i) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~DSDVRRPW (SEQ ID NO:260);~~

(j) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~AADQRRGW (SEQ ID NO:261);~~

(k) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~DGRGGRSY (SEQ ID NO:262);~~

(l) — a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: ~~RVRS (SEQ ID NO:263);~~

(m) ~~—a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRSGCGFRGSS (SEQ ID NO:264); and~~

(n) ~~—a protein which is not more than 50 amino acids in length and includes, positioned anywhere along its sequence, the contiguous amino acid sequence of: SVRGGCGAHSS (SEQ ID NO:265).~~

142. (currently amended) The method of claim 141 ~~142~~ wherein the protein comprises ~~the an~~ amino acid sequence of SEQ ID NO:51 ~~selected from the group consisting of SEQ ID NOS:1-55 or a binding portion thereof.~~

143-148. (canceled)

149. (currently amended) The method of claim 141 ~~as in any one of claims 143-149~~ wherein the purified protein is not more than 40 amino acids in length.

150. (currently amended) The method of claim 141 ~~as in any one of claims 143-149~~ wherein the purified protein is not more than 30 amino acids in length.

151. (currently amended) The method of claim 141 ~~as in any one of claims 143-149~~ wherein the purified protein is not more than 20 amino acids in length.

152. (currently amended) The method as in any one of claims 141-142 ~~143-149~~ wherein said ~~composition~~ purified protein facilitates the transport of the drug through human or animal gastro-intestinal tissue.

153. (currently amended) The method as in any one of claims 141-142 ~~143-149~~ in which the administering is oral.

154. (currently amended) The method as in any one of claims 141-142 ~~143-149~~ in which the subject is a human.

155. (currently amended) The method of claim 75, wherein the first protein comprises ~~at least~~ 10 contiguous amino acids of ~~the an~~ amino acid sequence ~~selected from the group consisting of~~ SEQ ID NO:51 ~~NOS:1-55.~~